REMARKS

In response to the Examiner's Action mailed on June 20, 2003, claims 1 to 2 are amended and claims 3 to 20 are added. The applicants hereby respectfully request that the patent application be reconsidered.

An item-by-item response to Examiner's objections or rejections is provided in the followings:

1-4 Rejection of Claims 35 USC 102:

The Examiner rejects claims 1-2 under 35 USC § 102(e) as being anticipated by Sunberg et al. US 6,451,188.

Sunberg et al. disclose a system and apparatus in which fluid introduction is facilitated through the use of a port which extends entirely through a microfluidic substrate. Capillary forces can be used to retain the fluid within the port, and a series of samples or other fluids may be introduced through a single port by sequentially blowing the fluid out through the substrate and replacing the removed fluid with an alternate fluid, or by displacing the fluid in part with additional fluid. In another aspect, microfluidic substrates have channels which varying in cross-sectional dimension so that capillary action spreads a fluid only within a limited portion of the channel network. In yet another aspect, the introduction ports may include a multiplicity of very small channels leading from the port to a fluid channel, so as to filter out particles or other contaminants which might otherwise block the channel at the junction between the channel and the introduction port.

Pins 38(sticks of the same length) are mounted on a pin support structure 48 (substrate). As pins 38 are aligned with through-hole ports 34, a large number of individual drops 36 may be transferred simultaneously from the pins to the through-hole ports by moving pin support structure 48 into close proximity with substrate 32. Drops 36 may be formed on pins 38 by dipping the pins in an associated array of fluid receptacles, by distributing the fluid through channels within fluid support structure 48, or the like. As only very small amounts of fluid are needed for the microfluidic analysis, the size of drops 36 can be quite small.

By relying on pins to transfer drops on their outer surfaces (rather than individual pipettes with complex hydraulic or pneumatic systems), the cost and complexity of a system for transporting a large number of discrete drops of fluid into associated microfluidic ports can be substantially reduced. The pins may optionally be aligned in an array corresponding to at least a portion of a standard microtiter plate, e.g., 12 rows of 8 pins on 9mm spacings, to facilitate preparing samples and other fluids with conventional chemical and biological techniques.

The Examiner further rejects Claims 1-2 under 35 U.S.C. 102(e) as being anticipated by Schurenberg et al. US 6,287,872. According to the Examiner, Schurenberg et al. disclose an invention that refers to sample support plates for the mass spectrometric analysis of large molecules, preferable biomolecules, methods for the manufacture of such sample support plates and methods for loading the sample support plates with samples of biomolecules from solutions together with matrix substance for the ionization of the biomolecules using matrix-assisted laser desorption (MALDI). The droplets are applied in an efficient manner if the multiple pipette is located at a distance of 500 micrometers above the sample support. About 500 nanoliters of sample solution are pipetted from every pipette tip of the multiple pipette onto the sample support as shown schematically in FIG. 1. Usually the amount of sample solution in the pipette tip is sealed off by a gas bubble, therefore there is no more solution present in the channel (microchannel for holding a liquid sample) of the pipette tip afterward and the contact forces to the hydrophobic pipette tip are very minimal. As seen in figure 1 the pipette tips labeled as 4 are of the same length and comprise a channel for holding the liquid.

The Examiner further rejects Claims 1-2 under 35 U.S.C. 102(e) as being anticipated by Martinsky US 6,101,946. According to the Examiner, Martinsky discloses a device for fabricating microarrays of biochemical substances, consisting of a holder and one or more printing pins (sticks of the same length). The holder contains apertures with regular spacing that define the location of one or more printing pins during the printing process. The tip of each printing pin contains a sample channel (channels for holding a liquid) that holds a predetermined volume of biological or chemical sample and a point that is machined to precision with an electronic discharge machine (EDM). The device can be attached to a motion control system for precise and automated movement

in three dimensions. The flat tips of the pins are immersed in a biochemical sample such that a predefined volume of sample fills the sample channel of each pin. The holder and pins are then moved in proximity to a printing substrate whereby direct contact between the fiat tips of the pins and the surface results in the transfer of a small amount of the sample onto the solid surface. The holder and pins are mass-produced at high precision to ensure that the printed elements in the resultant microarray contain approximately the same quantity of sample. In one preferred embodiment, the device is employed to manufacture arrays of nucleic acids or derivatives thereof.

In response to the rejections, claims 1 and 2 are amended. The amended claim 1 is directed to a micro-stamp array supported on a substrate to include:

> an array of micro-stamp sticks **composed of a cured silicon rubber** substantially of a same stick length extending vertically from a surface of said substrate.

Claim 2 is also amended such that:

> each of said micro-stamp sticks further comprising a micro-channel for holding a liquid sample of predefined volume **provided for maintaining an air-liquid equilibrium specifically for said liquid sample held** therein.

The amended claims 1 and 2 and also the added claims 3 to 20 as amended now include elements and limitations not disclosed and not anticipated by the cited prior art references. Therefore, the amended and the added claims would be novel and non-obvious over the cited prior art references.

With the amended claims and the reasons provided above, the applicant hereby respectfully urges that Examiner's rejections under 35 USC § 102 of the claims be withdrawn and the present application be allowed.

Respectfully submitted
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By _____

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